National Measurement Office Certification

UK/0126/0138

MI-006

EC type-examination certificate UK/0126/0138

Issued by:

The National Measurement Office
Notified Body Number 0126

In accordance with the requirements of the Measuring Instruments (Automatic Gravimetric Filling Instruments) Regulations 2006 (SI 2006/1258) and the Measuring Instruments (Non-Prescribed Instruments) Regulations 2006 (SI 2006/1270) which implement, in the United Kingdom, Council Directive 2004/22/EC, this EC type-examination certificate has been issued to:

Ishida Europe Ltd
11 Kettles Wood Drive
Woodgate Business Park
Birmingham, B32 3DB
United Kingdom

in respect of a family of automatic gravimetric filling instruments designated the CCW-R, CCW-RS and CCW-RV, comprising a weighing controller, a material feed mechanism, and weighing units comprising a load receptor and associated load cell(s) and having the following characteristics:

Reference accuracy class	Ref (1)			
Scale interval, d =	0.2 g	0.5 g	1 g	2 g
Maximum capacity, Max =	400 g	800 g	2000 g	4000 g
Minimum capacity, Min =	3.8 g	10 g	19 g	50 g

The necessary data (principal characteristics, alterations, securing, functioning etc) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

Issue Date: **21 March 2013**
Valid Until: **20 March 2023**
Reference No: **TS0104/0007**

Signatory: **P R Dixon**
for **Chief Executive**

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UKAS PRODUCT CERTIFICATION 0135

National Measurement Office

Descriptive Annex

1 INTRODUCTION

This family of automatic gravimetric filling instruments, designated the CCW-R, CCW-RS and CCW-RV, is designed for dispensing predetermined loads of powdered, granular or liquid materials. The instruments consist of a feeding device, a number of weighing units, and a weighing controller.

Each model is designated the CCW-xx-2nn, with xx the type of instrument (R, RS or RV) and nn the number of weighing units. Figure 1 shows a typical configuration for the CCW-RV-210.

The instruments operate as associative (selective combination) weighers, and derive the most appropriate combination of loads in one or more weighing unit for discharge as a fill so that the target weight selected by the user is achieved.

2 FUNCTIONAL DESCRIPTION

2.1 Mechanical

2.1.1 Main body

The Main Body construction is as shown in Figure 2 and as described in the following table.

No.	Name	Functional description
1	Inlet chute	Product inlet The funnel-shaped inlet chute guides product fed from the infeed equipment onto the centre of the dispersion table.
2	Dispersion table	The dispersion table conveys product from the inlet chute to the radial troughs.
3	Dispersion feeder (DF)	The magnetic coil incorporated in the feeder vibrates the dispersion table. Product flow amount is controlled by means of the weigh sensor which measures the amount of product on the dispersion table.
4	Radial trough	The radial troughs receive vibration from the radial feeders and convey product to the pool hoppers.
5	Radial feeder (RF)	The magnetic coil incorporated in the feeder vibrates the radial trough.
6	Pool hopper (PH)	Each pool hopper receives product fed from the radial troughs above it and holds it temporarily in synchronisation with the product weighing. The pool hoppers open or close according to the weighing operation to feed product into the weigh hoppers.
7	Weigh hopper (WH)	The weigh hoppers measure the weight of product received from the pool hoppers. These hoppers open or close as a result of combination weighing to feed product into the collection chutes.
8	Weigh/drive unit (WDU)	The weigh/drive unit powers the open/close action of the weigh and pool hoppers. It also contains a load cell (see 2.1.2 below) which measures the weight of product in the weigh hoppers.

9	Collection chute	The collection chute receives and collects product discharged from the weigh hoppers and guides the product down into the discharge chute.
10	Discharge chute	The discharge chute receives and collects product discharged from the weigh hoppers and guides the product down into the timing hopper or the packer.
11	Timing hopper (TH) (Optional)	The timing hopper temporarily pools the product from the discharge chute and controls the timing of the discharge to the packer.
12	Timing hopper drive unit (Optional)	The timing hopper drive unit powers the open/close action of the timing hopper.
13	Feeder cover (Optional)	The feeder cover prevents dust from intruding into the dispersion and the radial feeders.
14	Remote control unit (RCU)	The RCU contains the display and keyboard used to operate and monitor the instrument.
15	Printer (Optional)	Prints out setting data, weighing results, and statistical data.
16	Main power switch	Turns on and off the power to the weigher.
17	Drive case	Incorporates the main electrical unit and driving unit.
18	Body	Incorporates PS-0, PS-2, CAL, and/or relay unit.

2.1.2 Weighing units

Each weighing unit comprises a load cell supporting the weigh hopper and associated load transportation mechanism.

The load cell is manufactured by by Ishida Japan, with type and capacity as per table 3.1.

2.2 Electrical

2.2.1 Weighing controller

The weighing controller comprises an A/D converter, PCBs, a PLC and manages the filling operation.

PRINTED CIRCUIT BOARD DESCRIPTION	R/RS	RV	REFERENCE SCHEMATICS (R&RS)	REFERENCE SCHEMATICS (RV)
ADC BOARD	P-5576		380-0252	584-1118
DDU BOARD	P-5439		380-0154	584-1121
CAM SENSOR BOARD	P-5207		380-0154	584-1121
DUC BOARD	P-5428		380-0154	584-1121
DUC CONNECTOR BAORD (HUB BOARD)	P-5535		380-1288	584-1119
FDRV BOARD	P-5578		380-1288	584-1119
FDC BOARD	P-5532		380-1288	584-1119
PRE AMP BOARD	P-5435		380-1273	584-1065
RCU BOARD	P-970	P-5662	380-0156	584-1073
RELAY BOARD	P-5506		380-0158	584-1113
EXC BOARD	P-5426		380-0158	584-1113
WCU BOARD	P-5561		380-0159	584-1115
DMU BOARD	P-5562		380-0159	584-1115

2.2.2 Remote control unit (RCU)

The RCU (Figure 3) consists of a touch screen, main power switch and printer. It is designed to be hooked and secured by screws onto the instrument, and provides the user interface.

2.3 Devices

The instrument is provided with the following devices:

- Semi-automatic zero-setting device
- Automatic zero-setting device
- Determination of stability of equilibrium
- Determination of optimum combination of loads
- Automatic selection of “Low target weights” or “high target weights” modes based on the target weight
- Printing

2.4 Operation

2.4.1 General

Following power-on, the instrument runs through a display check on the RCU and enters the main menu.

Whenever an error condition is detected, the instrument will stop operation immediately, with the relevant error message shown on the display, until the fault is acknowledged and cleared by the operator.

2.4.2 Automatic operation

The automatic weighing operation is as shown in Figure 4 and as detailed below. This is preceded by the operator selecting a “Preset” which contains a pre-determined target weight value and then pressing the “Start” key.

No.	Process
1	Product is supplied to the inlet chute from the upstream infeed equipment.
2	Product is conveyed from the inlet chute to the dispersion table, and the dispersion table vibrates to convey product onto the radial troughs.
3	The radial troughs vibrate to convey product onto the pool hoppers.
4	The pool hoppers discharge product to the weigh hoppers as required.
5	Product is weighed in the weigh hoppers.
6	Select the weigh hoppers so that the target weight is achieved. Then product is discharged from the selected hoppers.
7	Product is collected in the collection chute and discharged from the discharge chute.
8	If an optional timing hopper is installed, product is discharged on the discharge request from the packer.

Upper and lower tolerance limits are set for each preset. If the weight in the weigh hoppers is such that the final fill value will exceed these tolerances, an error message is given and the fill is not discharged.

2.4.3 Average weight mode

An Average Weight Mode is available in the Preset settings (Level 2). In this mode, a Tolerable Negative Error (TNE) is automatically derived from the next table. The TNE is the acceptable negative error from the target weight (or nominal weight, otherwise known as Qn) selected by the operator.

Nominal weight Qn (g)	TNE (g)
$5 \leq Qn < 50$	0.09 x Qn
$50 \leq Qn < 100$	4.5
$100 \leq Qn < 200$	0.045 x Qn
$200 \leq Qn < 300$	9
$300 \leq Qn < 500$	0.03 x Qn
$500 \leq Qn < 1000$	15
$1000 \leq Qn < 10000$	0.015 x Qn

In the Average Weight Mode, the filling operation is fully controlled to meet both of the conditions listed below:

(i) The actual weight shall not be less, on average, than the nominal weight (Qn) predetermined by the operator and marked on the bag/container.

(ii) Any fill below Qn - TNE is not discharged.

3 TECHNICAL DATA

3.1 The technical data for the instruments is as follows:

Power supply	230 VAC / 50 Hz			
Reference accuracy class, Ref(x)	1			
Accuracy Class	Assigned at verification			
"Volume"	Standard		Large	
"Target weight" mode *	Low	High	Low	High
Scale interval d = (g)	0.2	0.5	1	2
Maximum capacity (g)	400	800	2000	4000
Minimum capacity (g)	3.8	10	19	50
Minimum Fill (g)	15.2	40	76	200
Frequency of automatic zero setting	24 min	63 min	79 min	158 min
Load cell type	TLC-6L		NLC-24L	
Load cell E_{max}	6 kg		24 kg	
Average number of loads	4			
Maximum rate of operation	Assigned at verification			
Operating temperature range	-5 °C to + 40 °C			
Climatic environment	Closed, non-condensing			
EM Classification	E1 and E2			

*: The Low and High target weights modes are referred to as "Range 1" and "Range 2" respectively on the rating plate.

3.2 Drawings and documentation

Designation	Number	Issue
CCW-xx-2** User/Service manual	144-4027-04	?
Assembly layout and dimensional drawings	56****	01
Parts list (Individual Machine specific)	See User Manual	
Electrical schematics	584-1073 (RCU)	00
	584-1073 (AFV)	00
	584-1115 (CAL1)	00
	584-1118 (CAL2)	00
	584-1121 (WDU1)	00
	584-1124 (WDU2)	00
	584-1119 (MAIN)	00
	584-1065 (TOTAL)	00
	584-1045 (POWER)	00
Block diagrams	105-3851	04
	107-2454	00
CF Card Sealing	284-2076	01
Load cell TLC-6L	52-3052	05
Load cell NLC-24L	00-6955	09

3.3 Software

3.3.1 Verification information

The legally relevant software shall be as follows (checksums):

Unit	CCW-R/RS		CCW-RV	
RCU	6DD3			
DMU	383F (Std Vol.)	01F2 (Large Vol.)	85EC (Std Vol.)	4F97 (Large Vol.)
WCU	2592		EDF1	

This information can be displayed by accessing the ‘program number’ page in the maintenance pages of the RCU (Figure 5).

3.3.2 Security

The legally relevant parameters are hard-coded with the exception of the zero-span calibrations which is password-protected. A non-editable counter increments every time a calibration is changed, the counter is designated is displayed at the bottom of the Zero/Span page in maintenance level, using the format: #counter, time, date (Figure 6).

4 PERIPHERAL DEVICES AND INTERFACES

4.1 Interfaces

The instrument may have the following interfaces:

- RS232C (CCW-R and CCW-RS)
- RS485 (CCW-R and CCW-RS)

Note: These interfaces shall only be used in environments suitable for E1 electromagnetic classification.

4.2 Peripheral devices

The instrument may be connected to any peripheral device that has been issued with a test certificate or parts certificate by a Notified Body responsible for Annex B (MI-006) under Directive 2004/22/EC in any Member State and bears the CE marking of conformity to the relevant directives; or

A peripheral device without a test certificate may be connected under the following conditions:

- it bears the CE marking for conformity to the EMC Directive;
- it is not capable of transmitting any data or instruction into the weighing instrument, other than to release a printout, checking for correct data transmission or validation;
- it prints weighing results and other data as received from the weighing instrument without any modification or further processing; and
- it complies with the applicable requirements of Paragraph 8.1 of Annex I.

4.3 Printer

If a printer is used it shall bear a label marked “FOR MANAGEMENT PURPOSES ONLY”.

5 APPROVAL CONDITIONS

The following legends are durably and legibly marked on a rating plate located on the instrument (Figure 7):

‘CE’ marking
Supplementary metrology marking
Notified body identification number
Reference accuracy class, Ref(x)
Accuracy class X(x)
Maximum capacity
Rated minimum fill
Scale interval (d)
Serial number
Type designation
Manufacturers mark or name
Certificate number
Information in respect of the conditions of use

5.2 The instrument shall be permanently installed.

5.3 The instrument shall be set to zero via the automatic zero-setting, the minimum frequencies of zero-setting shall be as per table 3.1.

6 LOCATION OF SEALS AND VERIFICATION MARKS

6.1 The ‘CE’ mark shall be impossible to remove without damaging it. The rating plate shall be impossible to remove without it being destroyed, or be sealed via tamper-evident stickers (bearing a securing mark as described in section 6.2).

The markings and inscriptions shall fulfil the requirements of Paragraph 9 of Annex I of the Directive 2004/22/EC.

6.2 Components that may not be dismantled or adjusted by the user (load cell, CF card) must be secured. The seals shall bear a securing mark which may be either:

- a mark of the manufacturer and/or manufacturer's representative, or
- an official mark of a verification officer.

The CF card is sealed as shown in Figure 8.

6.3 The Calibration Count's value for (as described in section 3.3.2) shall be written on a tamper-evident label on or near the rating plate.

7 ALTERNATIVES

There are currently no authorised alternatives.

8 ILLUSTRATIONS

Figure 1 CCW-RV-210
Figure 2 Main body construction
Figure 3 Remote control unit
Figure 4 Sequence of operation
Figure 5 Verification information
Figure 6 Calibration counter
Figure 7 Rating plate example
Figure 8 CF card sealing method

9 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
UK/0126/0138	21 March 2013	Type examination certificate first issued.

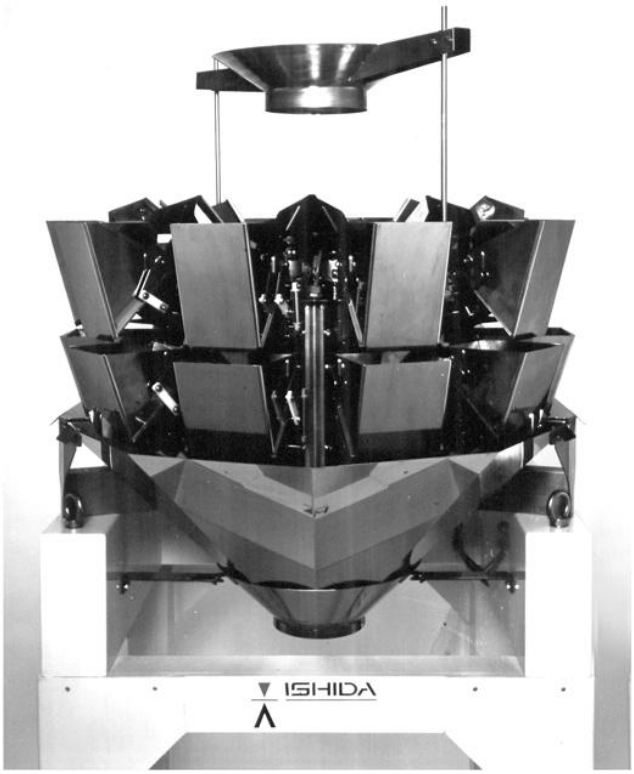

Figure 1 CCW-RV-210

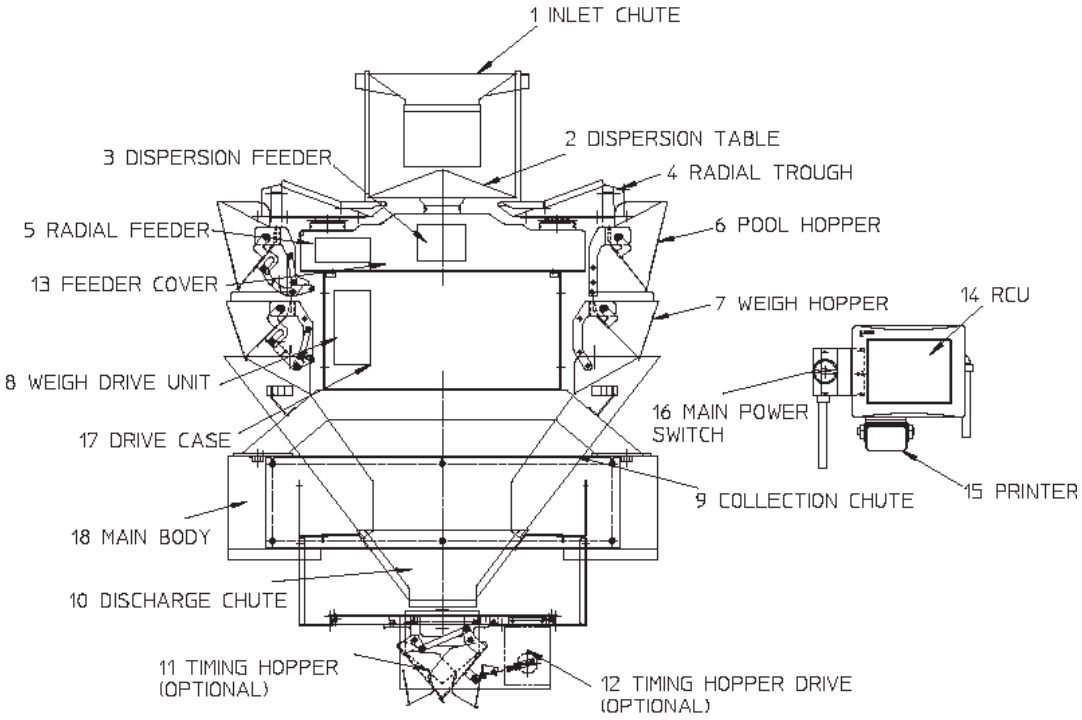

Figure 2 Main body construction

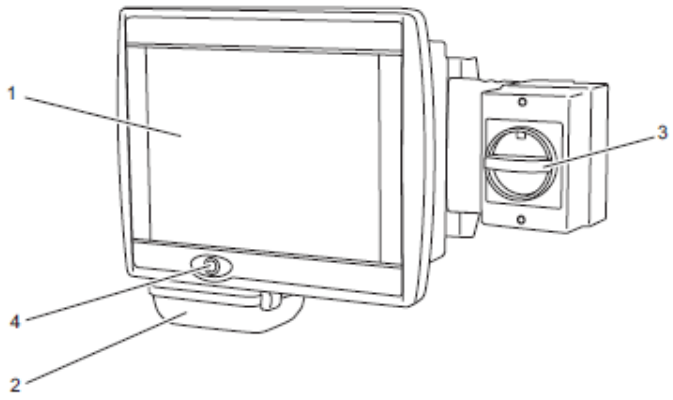

Fig.3-1

Table 3-1

No.	Name	Function
1	Operation Panel	Used to perform setting and displaying of the menu.
2	Printer	Prints out the production summary and the setting details of individual products.
3	Main power switch	Turns the main power supply to the device ON/OFF.
4	Camera	Takes photos of the products.

Figure 3 Remote control unit

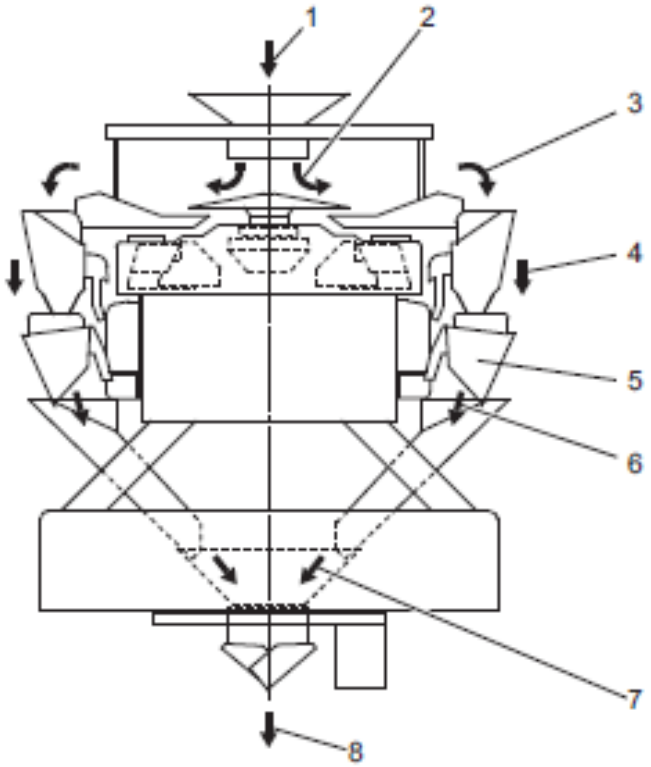

Figure 4 Sequence of operation

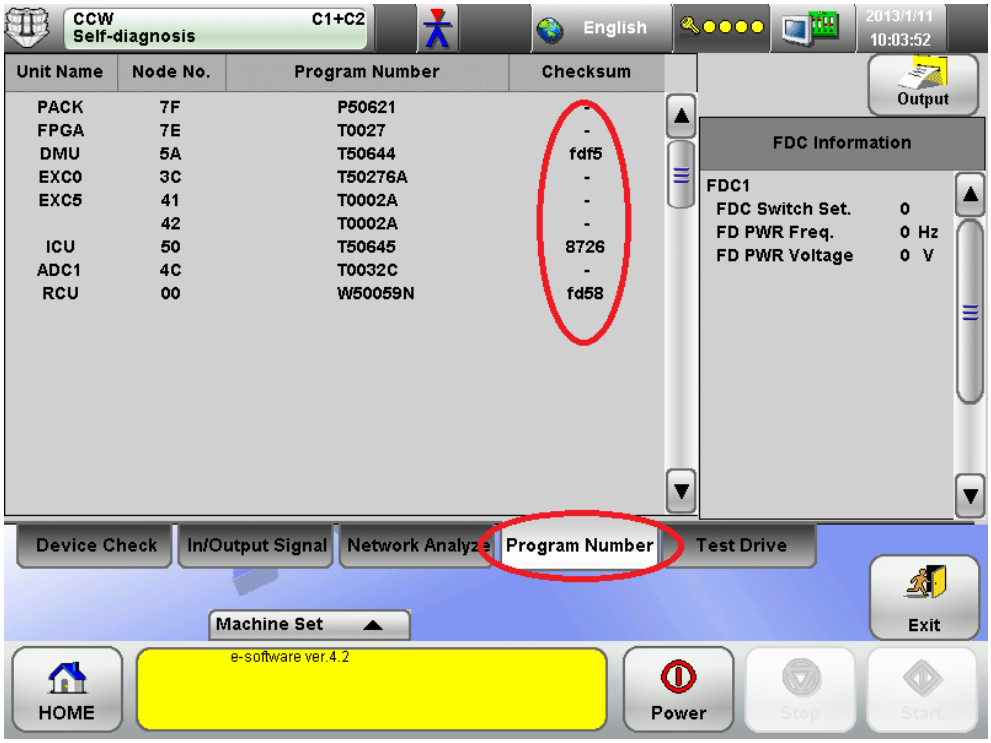

Figure 5 Verification information
(The checksum values shall be as per section 3.3.1)

Figure 6 Calibration counter

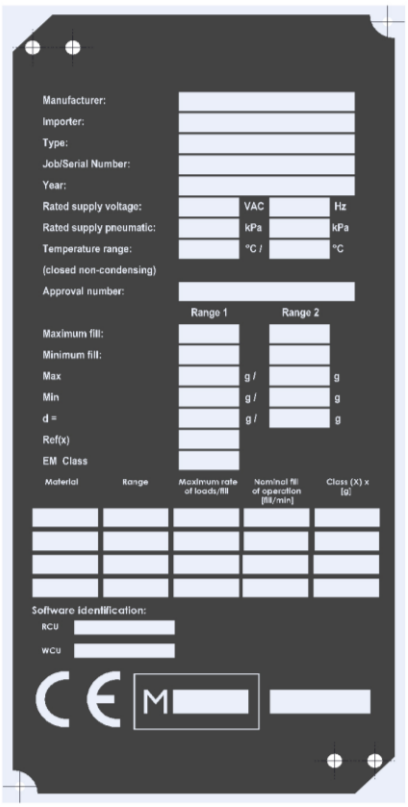

Figure 7 Rating plate example

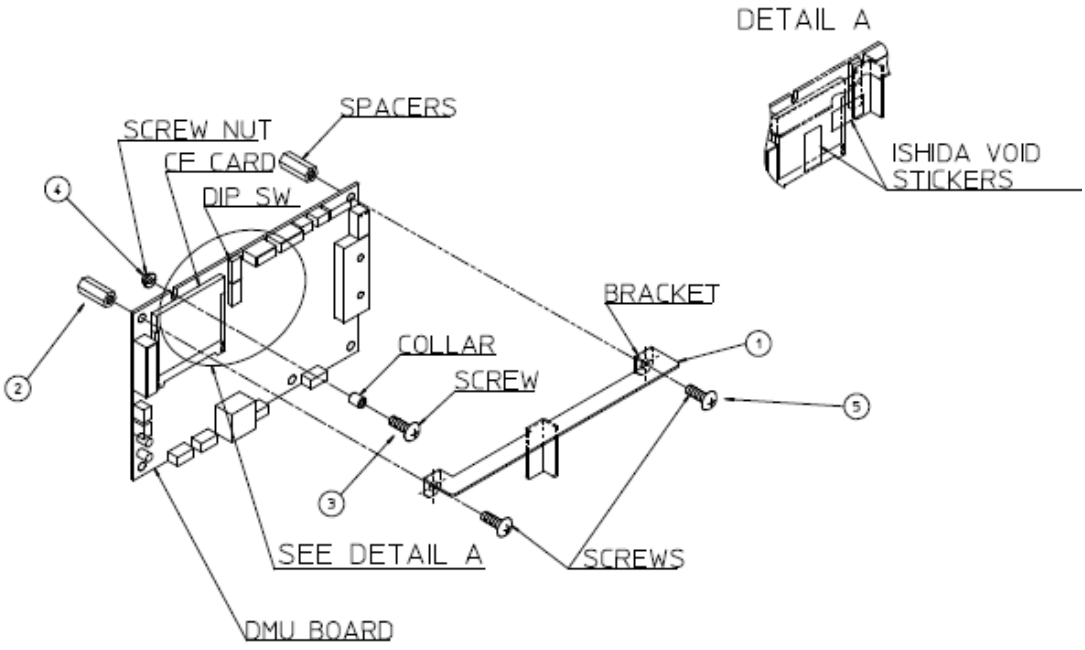

Figure 8 CF card sealing method

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